

PENDING CLAIMS AS AMENDED

Please amend the claims as follows:

1. (Currently amended) In a wireless communication system supporting mobile Internet Protocol (IP), a method comprising:

~~sending~~ receiving a registration request message ~~[[to]]~~ at a home agent wherein the registration request message includes a care-of address;
providing a home address for a mobile node;
associating the home address with the care-of address;
providing an inactivity timer for the mobile node at the home agent;
monitoring a condition of the home agent; ~~[[and]]~~
starting a reclaiming resources process at the home agent through use of the inactivity timer for the mobile node when the condition satisfies an overload condition; and
sending a series of echo request messages to the mobile node when the condition satisfies the overload condition and when the inactivity timer for the mobile node is expired.

2. (canceled)

3. (Currently amended) The method as in claim ~~[[2]]~~ 1, further comprising resetting the inactivity timer for the mobile node if an ~~ICMP~~ echo reply message is received in response to any of the ~~ICMP~~ echo request messages of ~~[[a]]~~ the series of ~~ICMP~~ echo request messages.

4. (Currently amended) The method as in claim ~~[[2]]~~ 1, further comprising reclaiming a resource of the home agent if all of the ~~ICMP~~ echo request messages timeout.

5. (Currently amended) The method as in claim ~~[[2]]~~ 1, further comprising reclaiming ~~[[the]]~~ a resource of the home agent if the home agent receives ~~an ICMP~~ a destination host

unreachable error from a foreign agent in response to any ICMP echo request message of [[a]] the series of ICMP echo request messages.

6. (Currently amended) The method as in claim [[2]] 1, further comprising reclaiming [[the]] a resource of the home agent if the home agent receives [[the]] a ICMP destination host unreachable error from an intervening node in response to a last ICMP echo request message of the series of ICMP echo request messages.

7. (Currently amended) The method as in claim [[2]] 1, further comprising reclaiming [[the]] a resource of the home agent if the home agent receives [[the]] a ICMP destination host unreachable error from an intervening node in response to any ICMP echo request message of the series of ICMP echo request messages.

8. (Currently amended) The method as in claim 1, wherein the reclaiming resources process is started when the condition satisfies the overload condition defined by UPPER_OL data an upper limit.

9. (Currently amended) The method as in claim 8 further comprising continuing the reclaiming resources process until the condition is lower than ~~the overload condition defined by~~ LOWER_OL data a lower limit.

10. (Original) The method as in claim 1 wherein the condition relates to availability of IP addresses.

11. (Currently amended) A home agent for use in a wireless communication system supporting mobile Internet Protocol (IP), the home agent comprising:

a plurality of mobility bindings, wherein each mobility binding comprises:

a home address provided by the home agent for use by a corresponding mobile node;

a care-of address received from the corresponding mobile node when the corresponding node ~~sent~~ sends a registration request message;
 a lifetime value defining ~~[[the]]~~ a term of validity for the home address; and
 an inactivity timer ~~for the corresponding mobile node~~ to monitor an activity status of the corresponding mobile node, wherein the home agent is configured to create the inactivity timer for the corresponding mobile node when the mobility binding is created for the corresponding mobile node; and
a resource condition that represents a current capacity of a home agent resource, wherein the home agent is configured to enter a resource reclaiming process when the resource condition satisfies an overload condition, wherein the resource reclaiming process searches each mobility binding of the plurality of mobility bindings for expired inactivity timers, and for each mobility binding with an expired inactivity timer the home agent implements a method comprising sending a series of echo request messages to the mobile node from the mobility binding with the expired inactivity timer.

12-14. (canceled)

15. (Currently amended) The home agent as in claim ~~[[14]]~~ 11, wherein the method further comprises resetting the expired inactivity timer if an ~~ICMP~~ echo reply message is received in response to any of the ~~ICMP~~ echo request messages of ~~[[a]]~~ the series of ~~ICMP~~ echo request messages.

16. (Currently amended) The home agent as in claim ~~[[14]]~~ 11, wherein the method further comprises reclaiming a portion of the home agent resource if all of the ~~ICMP~~ echo request messages timeout.

17. (Currently amended) The home agent as in claim ~~[[14]]~~ 11, wherein the method further comprises reclaiming the portion of the home agent resource if the home agent receives ~~an ICMP~~

a destination host unreachable error from a foreign agent node in response to any ICMP echo request message of [[a]] the series of ICMP echo request messages.

18. (Currently amended) The home agent as in claim [[14]] 11, wherein the method further comprises reclaiming the portion of the home agent resource if the home agent receives [[the]] a ICMP destination host unreachable error from an intervening node in response to a last ICMP echo request message of the series of ICMP echo request messages.

19. (Currently amended) The home agent as in claim 11, further comprising UPPER_OL data that defines an upper limit of the overload condition.

20. (Currently amended) The home agent as in claim [[14]] 11, wherein the method further comprises reclaiming the portion of the home agent resource if the home agent receives [[the]] a ICMP destination host unreachable error from an intervening node in response to any ICMP echo request message of the series of ICMP echo request messages.

21. (Currently amended) The home agent as in claim 20, further comprising LOWER_OL data that defines a lower limit of the overload condition.

22. (Currently amended) The home agent as in claim [[21]] 19, wherein the home agent is further configured to enter the resource reclaiming process when the resource condition satisfies the overload condition defined by the UPPER_OL data that defines an upper limit of the overload condition.

23. (Currently amended) The home agent as in claim 22, wherein the home agent is further configured to continue the resource reclaiming process until the resource condition is lower than the overload condition defined by LOWER_OL data that defines a lower limit of the overload condition.

24. (Original) The home agent as in claim 11 wherein the resource condition relates to availability of IP addresses.

25. (Currently amended) In a wireless communication system supporting mobile Internet Protocol (IP), a method comprising:

~~sending~~ receiving a registration request message at a home agent from a mobile node ~~to a home agent~~ wherein the registration request message includes a care-of address;
creating a mobility binding for the mobile node at the home agent, wherein the mobility binding comprises:
a home address provided by the home agent for use by the mobile node;
the care-of address;
~~a lifetime value defining the term of validity for the home address;~~ and
an inactivity timer ~~for the mobile node~~ to monitor an activity status of the mobile node;
entering an overload condition at the home agent; [[and]]
starting a reclaiming resources process at the home agent if the inactivity timer has expired; and
sending a series of echo request messages to the mobile node when the inactivity timer has expired.

26. (canceled)

27. (Currently amended) The method as in claim [[26]] 25, further comprising resetting the inactivity timer if an ~~ICMP~~ echo reply message is received in response to any of the ~~ICMP~~ echo request messages of [[a]] the series of ~~ICMP~~ echo request messages.

28. (Currently amended) The method as in claim [[26]] 25, further comprising reclaiming a resource of the home agent if all of the ~~ICMP~~ echo request messages timeout.

29. (Currently amended) The method as in claim ~~[[26]]~~ 25, further comprising reclaiming ~~[[the]]~~ a resource of the home agent if the home agent receives ~~an ICMP~~ a destination host unreachable error from a foreign agent node in response to any ~~ICMP~~ echo request message of the series of ~~ICMP~~ echo request messages.

30. (Currently amended) The method as in claim ~~[[26]]~~ 25, further comprising reclaiming ~~[[the]]~~ a resource of the home agent if the home agent receives ~~[[the]]~~ a ~~ICMP~~ destination host unreachable error from an intervening node in response to the last ~~ICMP~~ echo request message of the series of ~~ICMP~~ echo request messages.

31. (Currently amended) The method as in claim ~~[[26]]~~ 25, further comprising reclaiming ~~[[the]]~~ a resource of the home agent if the home agent receives ~~[[the]]~~ a ~~ICMP~~ destination host unreachable error from an intervening node in response to any ~~ICMP~~ echo request message of the series of ~~ICMP~~ echo request messages.

32. (Currently amended) The method as in claim ~~[[26]]~~ 25, wherein the overload condition is entered based on an upper limit.

33. (Original) The method as in claim 32, further comprising ending the reclaiming resources process at the home agent based on a lower limit.

34. (Original) The method as in claim 25, wherein the reclaiming resources process reclaims IP addresses.

35. (Original) The method as in claim 25, wherein the reclaiming resources process reclaims memory.

36. (Original) The method as in claim 25, wherein the reclaiming resources process releases processing resources.

37. (Currently amended) A home agent for use in a wireless communication system supporting mobile Internet Protocol (IP), wherein the home agent is configured to implement a method comprising:

storing a plurality of mobility bindings, wherein each mobility binding corresponds to an individual mobile node, and wherein each mobility binding comprises:

a home address provided by the home agent for use by the individual mobile node;

a care-of address received from the individual mobile node and used by the home agent to forward data to the individual mobile node;

~~a lifetime value defining the term of validity for the home address; and~~

~~an inactivity timer for the individual mobile node to monitor an activity status of the corresponding mobile node;~~

monitoring a resource condition that represents a current capacity of a home agent resource, and starting a resource reclaiming process when the resource condition satisfies an overload condition;

wherein the resource reclaiming process searches each mobility binding of the plurality of mobility bindings for expired inactivity timers, and for each mobility binding with an expired inactivity timer the home agent sends a series of echo request messages to the individual mobile node.

38. (canceled)

39. (Currently amended) The home agent as in claim ~~[[38]]~~ 37, wherein the resource reclaiming process resets the expired inactivity timer if an ~~ICMP~~ echo reply message is received in response to any of the ~~ICMP~~ echo request messages of ~~[[a]]~~ the series of ICMP echo request messages.

40. (Currently amended) The home agent as in claim ~~[[38]]~~ 37, wherein the resource reclaiming process reclaims a portion of the home agent resource if all of the ~~ICMP~~ echo request messages timeout.

41. (Currently amended) The home agent as in claim ~~[[38]]~~ 37, wherein the resource reclaiming process reclaims a portion of the home agent resource if the home agent receives ~~an ICMP~~ a destination host unreachable error from a foreign agent node in response to any ~~ICMP~~ echo request message of the series of ~~ICMP~~ echo request messages.

42. (Currently amended) The home agent as in claim ~~[[38]]~~ 37, wherein the resource reclaiming process reclaims a portion of the home agent resource if the home agent receives ~~[[the]]~~ a ~~ICMP~~ destination host unreachable error from an intervening node in response to the last ~~ICMP~~ echo request message of the series of ~~ICMP~~ echo request messages.

43. (Currently amended) The home agent as in claim ~~[[38]]~~ 37, wherein the resource reclaiming process reclaims a portion of the home agent resource if the home agent receives ~~[[the]]~~ a ~~ICMP~~ destination host unreachable error from an intervening node in response to any ~~ICMP~~ echo request message of the series of ~~ICMP~~ echo request messages.

44. (Currently amended) The home agent as in claim 37, further comprising ~~UPPER_OL data that defines~~ UPPER_OL an upper limit of the overload condition.

45. (Currently amended) The home agent as in claim 44, further comprising ~~LOWER_OL data that defines~~ LOWER_OL a lower limit of the overload condition.

46. (Currently amended) The home agent as in claim 45, wherein the home agent starts the resource reclaiming process when the resource condition satisfies the overload condition defined by the ~~UPPER_OL data~~ UPPER_OL data upper limit.

47. (Currently amended) The home agent as in claim 46, wherein the home agent continues the resource reclaiming process until the resource condition is lower than the overload condition defined by ~~LOWER_OL data~~ the lower limit.

48. (Original) The home agent as in claim 37 wherein the resource condition relates to availability of IP addresses.

49. (Currently amended) A home agent for use in a wireless communication system supporting mobile Internet Protocol (IP), the home agent comprising:

means for servicing registration requests from mobile nodes;

means for providing home addresses to the mobile nodes;

means for binding the home addresses to care-of addresses;

means for monitoring the activity of each mobile node individually;

means for monitoring a resource condition that represents a current capacity of a home agent resource; [[and]]

means for reclaiming the home agent resource when the resource condition is overloaded;
and

means for sending a series of echo request messages to each mobile node with no activity during a period of time.